

# ENCLOSURES AND EXISTENCE PROOFS OF BIFURCATION POINTS FOR NONLINEAR BOUNDARY VALUE PROBLEMS

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For parameter dependent nonlinear elliptic boundary value problems a computer-assisted method enclosing solution branches and bifurcation points is presented. Starting from finitely many approximate solutions giving rise to the conjecture that there might be a bifurcation, the method encloses continuous solution branches, at the same time proving that bifurcation does indeed take place. It is based on bounds for the defects of the approximate solutions and on eigenvalue bounds for the linearization at these approximate solutions.